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Having thus described the invention, it is claimed:

- SUB 32
1. A coating composition for attaining buff-free alignment of liquid crystals on a liquid crystal display device, the coating composition comprising a positively or negatively charged rigid-rod poly(ionomer) or salt thereof, with (i) a low molecular weight counter-ion or (ii) a basic or acidic ionizable rigid-rod polymer, and a solvent which is capable of dissolving the rigid-rod poly(ionomer) or salt thereof.
- 10 2. A coating composition of claim 1 wherein the positively or negatively charged rigid-rod poly(ionomer) is a positively or negatively charged heterocyclic rigid-rod poly(ionomer) or salt thereof.
- B 3. The coating composition of claim 2 wherein the 15 heterocyclic rigid-rod poly(ionomer) is an N-substituted heterocyclic rigid-rod poly(ionomer).
- B 4. The coating composition of claim 2 wherein the heterocyclic rigid-rod poly(ionomer) is a positively charged poly(pyridinium) salt.
- 2B (5) The coating composition of claim 2 wherein the heterocyclic rigid-rod poly(ionomer) is a negatively charged poly(benzimidazole-sulfonate) or salt thereof.
- SUB 33 (6) The coating composition of claim 1 wherein the 20 rigid-rod poly(ionomer) is xanthan gum.
- ✓ 25 7. The coating composition of claim 1 wherein the solvent is a polar aprotic solvent.
8. The coating composition of claim 1 wherein solvent is water or dimethylsulfoxide (DMSO).

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9. The coating composition of claim 4 wherein DMSO is utilized as a solvent for the positively charged poly(pyridinium) salt.

10. The process for manufacturing a buff-free liquid crystal display with planar alignment which comprises applying the composition of claim 1 to an oppositely charged surface of an electrode, followed by a drying step wherein the application step causes the axes of the rigid-rod poly(ionomers) to align in a planar direction with pretilt.

11. The process of claim 10 wherein the rigid-rod poly(ionomer) is a salt of a heterocyclic rigid-rod poly(ionomer).

B 12. The process of claim ~~11~~<sup>10</sup> wherein the heterocyclic rigid-rod poly(ionomer) is a positively charged poly(pyridinium) salt.

B 13. A process of claim ~~11~~<sup>10</sup> wherein the heterocyclic rigid-rod poly(ionomer) is a negatively charged poly(benzimidazole-sulfonate) salt.

20 14. The process of claim ~~10~~<sup>10</sup> wherein the rigid-rod poly(ionomer) is xanthan gum.

15. The process of claim 10 wherein the application step is accomplished by a squeegee.

25 16. The process of claim 10 wherein the application step is accomplished by brushing, spraying, capillary action or meniscus coating.

17. The process of claim 10 wherein the charged transparent electrode surface is glass or indium tin oxide (ITO) having a negative charge.

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18. The process of claim 17 wherein a poly(pyridinium), dissolved in DMSO with a counter-ion, is coated by a squeegee onto the negatively charged glass or ITO surface.

5           19. The process for manufacturing a buff-free liquid crystal display having planar alignment and pretilt which comprises application of a positively charged rigid-rod poly(ionomer) or salt thereof dissolved in a solvent, said application being by a  
10 squeegee, to a transparent negatively charged glass or indium tin oxide (ITO) electrode surface followed by a drying step wherein the application via squeegee causes the axes of the rigid-rod poly(ionomer) to align in a planar direction with pretilt.

15           20. The process of claim 19 wherein the rigid-rod poly(ionomer) is poly(pyridinium) salt and the solvent is dimethylsulfoxide (DMSO).

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